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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/028,470

12/19/2001

Matthew J. Holliman

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1916

7590

07/26/2005

John P. Ward
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EXAMINER

KIM, CHONG R

ART UNIT

PAPER NUMBER

2623

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/028,470

Applicant(s)

HOLLIMAN ET AL.

Examiner

Charles Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 and 28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 and 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 25, 2004 has been entered.

Response to Amendment and Arguments

2. Applicant's arguments, see pages 6-9, filed February 14, 2005, with respect to the rejection(s) of claim(s) 1-22 and 28 have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the combination of Tian et al., International Publication No. WO 02/23468 A1 ("Tian"), the article entitled "Meeting QOS guarantees by End-to-End QOS Monitoring and Adaptation" by Huard et al. ("Huard"), and Sugaya et al., U.S. Patent No. 6,111,990 ("Sugaya"), the details of which are provided below.

Claim Objections

3. Claim 28 is objected to because of the following informalities: typographical error. It appears that the phrase "distortion dependent" in line 2 was meant to read "distortion-dependent". Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-14, 19, 22, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Tian et al., International Publication No. WO 02/23468 A1 ("Tian"), the article entitled "Meeting QOS guarantees by End-to-End QOS Monitoring and Adaptation" by Huard et al. ("Huard"), and Sugaya et al., U.S. Patent No. 6,111,990 ("Sugaya").

Referring to claim 1, Tian discloses a method of monitoring host signal quality, comprising:

- a. embedding a distortion-dependent watermark in a data set (page 13, lines 2-11)
- b. processing the data set using some parameter set (page 12, lines 4-20. Note that the packet distribution system processes the data set using some parameter set)
- c. determining degradation of the host signal quality by recovering a signal in the data set (page 13, line 10-page 14, line 10).

Tian does not explicitly disclose that the watermark is derived by quantizing the host signal using an ensemble of increasingly coarse quantizers. However, this feature was exceedingly well known in the art. For example, Sugaya discloses a watermark that is derived by quantizing a host signal using an ensemble of increasingly coarse quantizers [col. 3, line 4-

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col. 4, line 53 and figures 1-2. Note that the quantizer 21 (figure 2C) has a higher coarseness than the quantizer 20 (figure 2B)].

Tian and Sugaya are combinable because they are both concerned with digital watermarking techniques. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the distortion-dependent watermark of Tian so that it is derived from an ensemble of increasingly coarse quantizers, as taught by Sugaya. The suggestion/motivation for doing so would have been to enhance the watermarking method by suppressing deterioration in image quality during the embedding process (Sugaya, col. 1, lines 35-40). Therefore, it would have been obvious to combine Tian with Sugaya.

Tian and Sugaya do not explicitly disclose the step of adjusting the parameter set for processing (distributing) the data set based on the presence of data corruption determined from the recovered signal. However, this feature was exceedingly well known in the art. For example, Huard teaches the step of adjusting a parameter set for data processing (distributing) based on the presence of data corruption determined from a recovered signal [pages 352-353, sections 4.2 and 4.3. Huard explains that the transmission rate is adjusted based on the presence of data corruption (loss) determined from a recovered signal (sequence numbers)].

Tian, Sugaya, and Huard are combinable because they are all concerned with image processing methods. Tian and Sugaya are concerned with processing (distributing) the data with high quality, and explain that the watermark signal is implemented to detect any quality degradation of the signal (Tian, page 15, lines 3-6). Huard's method utilizes the detected quality degradation from the received signal to adjust the transmission parameters, thereby maintaining a high quality signal (Huard, page 353, section 4.3). At the time of the invention, it would have

been obvious to a person of ordinary skill in the art to modify the method of Tian and Sugaya so that the parameter set for the data processing (distributing) is adjusted based on the presence of data corruption determined from the recovered signal, as taught by Huard. The suggestion/motivation for doing so would have been to enhance the performance of the watermarking method by maintaining a high quality signal. Therefore, it would have been obvious to combine Tian and Sugaya with Huard to obtain the invention as specified in claim 1.

Referring to claim 2, Tian further discloses processing the data set by transform encoding the data set (page 8, lines 17-24).

Referring to claim 3, Tian further discloses processing the data set by packetizing and transmitting the data set (page 12, lines 12-20).

Referring to claim 4, Tian further discloses identifying image frame errors in packet transmitted audiovisual data sets (page 12, lines 12-14).

Referring to claim 5, Huard further discloses that adjusting the parameter set further comprises modifying network bandwidth to compensate for data corruption of the data set (page 353, section 4.3, second paragraph. Note that reducing the sending rate is interpreted as being analogous to modifying network bandwidth).

Referring to claim 6, Tian further discloses that determining degradation of the host signal quality further comprises quantitatively measuring spatial extent of corruption of image data sets (page 14, lines 12-32).

Referring to claim 7, Tian further discloses that determining degradation of the host signal quality further comprises quantitatively measuring temporal duration of corruption of data sets (page 17, lines 7-27).

Referring to claims 8-14, see the rejections of claims 1-7 respectively above.

Referring to claim 19, see the rejection of at least claim 5 above.

Referring to claim 22, see the discussion of at least claim 15 below. Tian and Sugaya do not explicitly disclose a back channel transmitter to communicate information to the processing module to adjust the parameter set for the data processing based on the presence of data corruption detected by the watermark recovery module.

Huard discloses a back channel transmitter to communicate information to a processing module to adjust the parameter set for the data processing based on the presence of data corruption (page 352, section 4.2).

Therefore, it would have been obvious to combine the teachings of Tian, Sugaya, and Huard for the reasons stated above (claim 1).

Referring to claim 28, Tian discloses a method of monitoring host signal quality, comprising:

- a. embedding a distortion-dependent watermark in a data set to allow reception-side determination of quality of the data set by measuring the amount (strength) of a recovered watermark (page 13, line 2-page 14, line 10)
- b. transmitting the data set having the embedded distortion-dependent watermark (page 12, lines 12-20)
- c. accepting information about the recovered watermark (page 14, lines 8-10. Note that the recovered watermark indicates the quality of the transmitted data set).

Tian does not explicitly disclose that the watermark is derived by quantizing the host signal using an ensemble of increasingly coarse quantizers. However, this feature was

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exceedingly well known in the art. For example, Sugaya discloses a watermark that is derived by quantizing a host signal using an ensemble of increasingly coarse quantizers [col. 3, line 4-col. 4, line 53 and figures 1-2. Note that the quantizer 21 (figure 2C) has a higher coarseness than the quantizer 20 (figure 2B)].

Tian and Sugaya are combinable because they are both concerned with digital watermarking techniques. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the distortion-dependent watermark of Tian so that it is derived from an ensemble of increasingly coarse quantizers, as taught by Sugaya. The suggestion/motivation for doing so would have been to enhance the watermarking method by suppressing deterioration in image quality during the embedding process (Sugaya, col. 1, lines 35-40). Therefore, it would have been obvious to combine Tian with Sugaya.

Tian and Sugaya do not explicitly disclose the step of utilizing the recovered watermark to adjust a transmission parameter for at least one later transmitted data set. However, this feature was exceedingly well known in the art. For example, Huard teaches the step of adjusting a transmission parameter for at least one later transmitted data set in response to a quality of transmitted data determined from a recovered signal (sequence number) [pages 352-353, sections 4.2 and 4.3].

Tian, Sugaya, and Huard are combinable because they are all concerned with image processing methods. Tian and Sugaya are concerned with transmitting the data with high quality, and explain that a watermark signal is implemented to detect any quality degradation of the signal (Tian, page 15, lines 3-6). Huard's method utilizes the detected quality degradation from a recovered signal to adjust a transmission parameter, thereby maintaining a high quality

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signal (Huard, page 353, section 4.3). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the method of Tian and Sugaya so that the recovered watermark is utilized to adjust a transmission parameter for at least one later transmitted data set, as taught by Huard. The suggestion/motivation for doing so would have been to enhance the performance of the watermarking method by maintaining a high quality signal. Therefore, it would have been obvious to combine Tian and Sugaya with Huard to obtain the invention as specified in claim 28.

5. Claims 15-18, 20, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Tian et al., International Publication No. WO 02/23468 A1 ("Tian") and Sugaya et al., U.S. Patent No. 6,111,990 ("Sugaya").

Referring to claim 15, Tian discloses a system for monitoring host signal quality comprising:

- a. a watermarking module to embed a distortion-dependent recoverable watermark in a data set (page 13, lines 2-11)
- b. a processing module for modifying the data using some parameter set (page 12, lines 4-20. Note that the packet distribution system modifies the data using some parameter set)
- c. a watermark recovery module to determine degradation of the host signal by recovering a signal in the data set (page 13, line 10-page 14, line 10).

Tian does not explicitly disclose that the distortion-dependent watermark is derived by quantizing the host signal using an ensemble of quantizers. For example, Sugaya discloses a watermark that is derived by quantizing a host signal using an ensemble of increasingly coarse

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quantizers [col. 3, line 4-col. 4, line 53 and figures 1-2. Note that the quantizer 21 (figure 2C) has a higher coarseness than the quantizer 20 (figure 2B)].

Tian and Sugaya are combinable because they are both concerned with digital watermarking techniques. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the distortion-dependent watermark of Tian so that it is derived from an ensemble of increasingly coarse quantizers, as taught by Sugaya. The suggestion/motivation for doing so would have been to enhance the watermarking method by suppressing deterioration in image quality during the embedding process (Sugaya, col. 1, lines 35-40). Therefore, it would have been obvious to combine Tian with Sugaya to obtain the invention as specified in claim 15.

Referring to claim 16, Tian further discloses a transform encoding processor to process the data set by transform encoding the data set (page 8, lines 17-24).

Referring to claim 17, Tian further discloses a packetizer to process the data set by packetizing and transmit the data set (page 12, lines 12-20).

Referring to claim 18, Tian further discloses that the watermark recovery module further detects image frame errors in packet transmitted audiovisual data sets (page 12, lines 12-14).

Referring to claim 20, Tian further discloses that the watermark recovery module quantitatively measures spatial extent of corruption of image data sets (page 14, lines 12-32).

Referring to claim 21, Tian further discloses that the watermark recovery module quantitatively measures temporal duration of corruption of data sets (page 17, lines 7-27).

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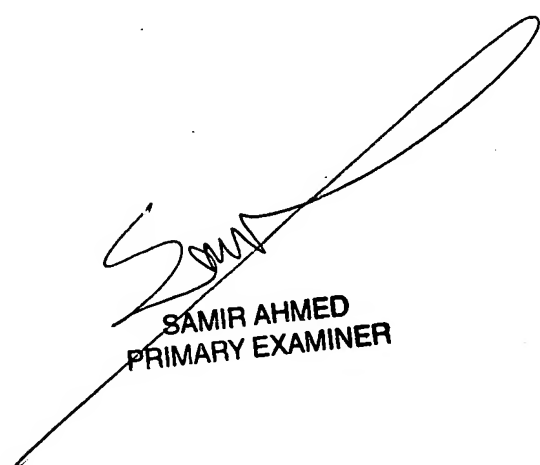
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Kim whose telephone number is 571-272-7421. The examiner can normally be reached on Mon thru Thurs 8:30am to 6pm and alternating Fri 9:30am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 571-272-7414. The fax phone number for the organization where this application or proceeding is assigned is 571-272-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ck
July 20, 2005


SAMIR AHMED
PRIMARY EXAMINER